

## **EXPLORATION MEDICAL CAPABILITY SYSTEM ENGINEERING INTRODUCTION AND VISION**

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Human exploration missions to beyond low Earth orbit destinations such as Mars will require more autonomous capability compared to current low Earth orbit operations. For the medical system, lack of consumable resupply, evacuation opportunities, and real-time ground support are key drivers toward greater autonomy. Recognition of the limited mission and vehicle resources available to carry out exploration missions motivates the Exploration Medical Capability (ExMC) Element's approach to enabling the necessary autonomy. The Element's work must integrate with the overall exploration mission and vehicle design efforts to successfully provide exploration medical capabilities.

ExMC is applying systems engineering principles and practices to accomplish its integrative goals. This talk will briefly introduce the discipline of systems engineering and key points in its application to exploration medical capability development. It will elucidate technical medical system needs to be met by the systems engineering work, and the structured and integrative science and engineering approach to satisfying those needs, including the development of shared mental and qualitative models within and external to the human health and performance community.

These efforts are underway to ensure relevancy to exploration system maturation and to establish medical system development that is collaborative with vehicle and mission design and engineering efforts.